

The NERC logo consists of the letters "NERC" in a bold, black, sans-serif font. A horizontal blue bar is positioned directly beneath the letters.

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

# Verifications of Models and Data for Generators

NERC Project 2020-06 – Progress Update

ESIG Spring Technical Workshop  
March 18, 2025

- History of 2020-06
- MOD-026-2 Highlights
  - Model Verification vs Model Validation definitions
  - Registered IBR, unregistered IBR, and DER in aggregate
  - Approach to EMT models
  - System Events for Model Validation
- MOD-026-2 Tentative Timeline

- **Pre-FERC Order No. 901**
  - March 2020 IRPTF review of standards led to Project 2020-06 SAR to address gaps in MOD-026-1 and MOD-027-1
  - Revise standards to include IBRs in addition to synchronous generators
  - Require GOs to verify dynamic models
  - Three drafts of MOD-026-2 posted for comment and ballot during the period May 2022 to Jul 2023
  - Created the Inverter-Based Resource (IBR) Definition Sep 2024
- **October 2023 FERC issued FERC Order No. 901**
- **Project 2020-06 SAR was modified to incorporate order within Milestone 3 timeline**

- Combine MOD-026-1 (Volt/Var Control) and MOD-027-1 (Active Power/Frequency Control)
- Define terms Model Verification and Model Validation
- Address modeling for registered IBRs as well as synchronous generators
- Adds EMT modeling requirements
- Provides a process for improving model fidelity
  - Requirements on GO/TO for model verification
  - Validation of models with actual disturbance monitoring data from PRC-002 and PRC-028

# Model Verification vs Model Validation definitions

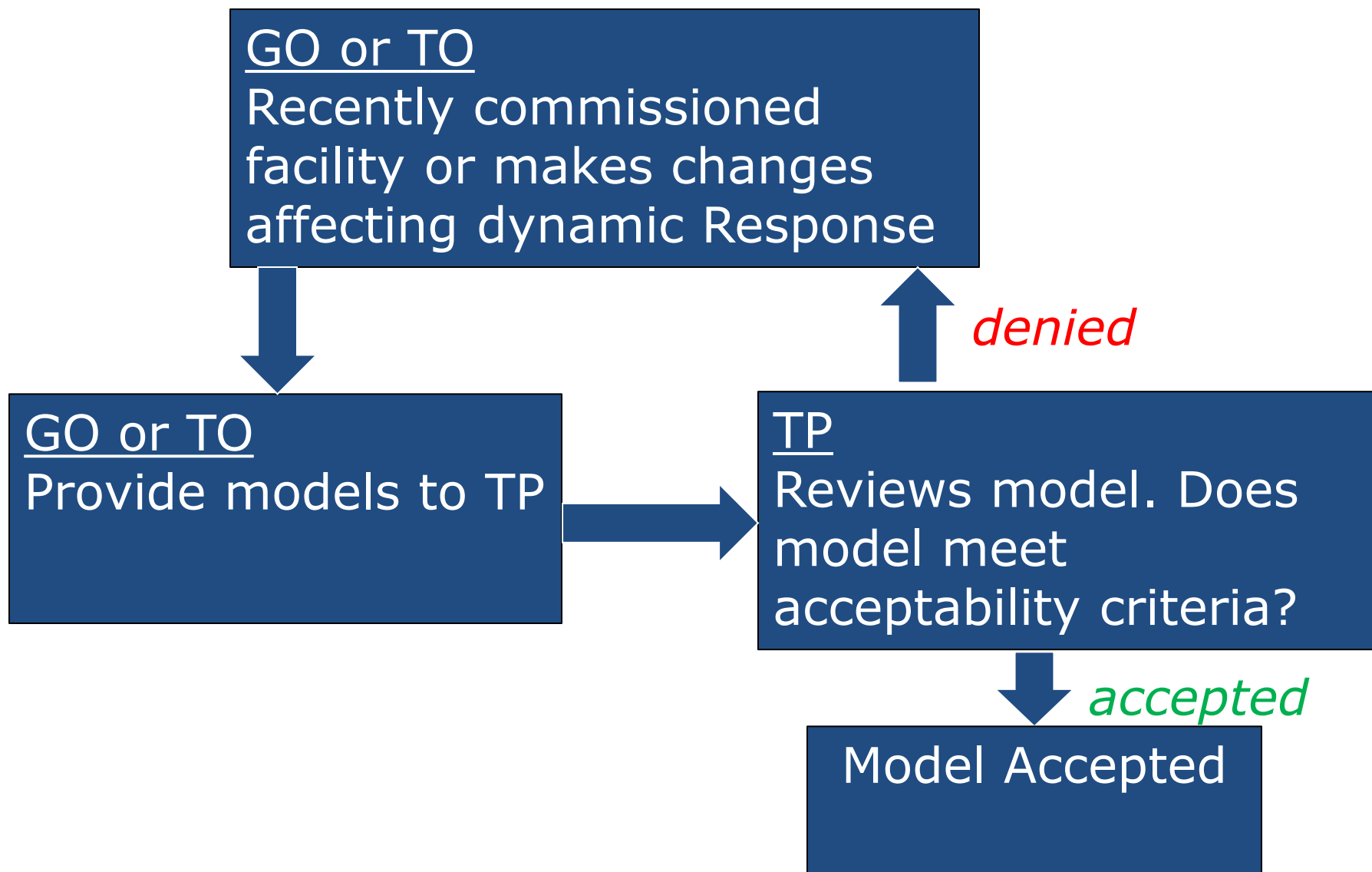


**Model Verification:** The process of confirming that model structure and parameter values represent the equipment or facility design and settings by reviewing equipment or facility design and settings documentation.



**Model Validation:** The process of comparing measurements with simulation results to assess how closely a model's behavior matches the measured behavior.

# Model Verification Process



TP and TOP  
Develop system event criteria



TOP  
Notifies TP of  
system event



TP  
Requests and  
receives event data  
from GO or TO



TP  
Performs model  
validation



MOD-26-2 draft will include registered IBR



New MOD-34 standard to be develop to address unregistered IBR and DER



EMT models will be required for IBRs commissioned after the effect date of MOD-026-2



Transmission Planner must identify which legacy facilities also need to provide EMT models



Standard addresses issues with legacy facilities that may be impacted by OEM no longer in business or supporting in-service equipment



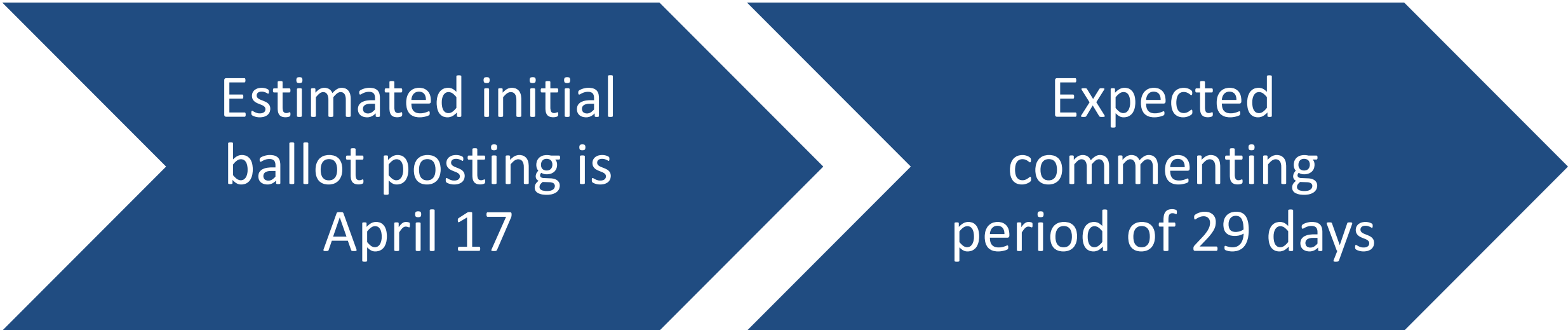
TP will work with TOP to develop a process for identification and notification of system events to be utilized in conjunction with TOP



TP will request disturbance data from GO or TO to perform model validation



TP Model Validation will utilize playback method to compare model output to disturbance data



Estimated initial  
ballot posting is  
April 17

Expected  
commenting  
period of 29 days

| <b>Name</b>                 | <b>Company</b>                        |
|-----------------------------|---------------------------------------|
| Brad Marszalkowski (chair)  | ISO-New England                       |
| David Marshall (vice-chair) | Southern Company                      |
| Jonathan Rose               | ERCOT                                 |
| Biju Gopi                   | California ISO                        |
| Sam Li                      | BC Hydro                              |
| Michael (Bing) Xia          | Powertech Labs                        |
| Robert J. O’Keefe           | American Electric Power               |
| Husam Al Haddadi            | Manitoba Hydro                        |
| Mohamed ElNozahy            | IESO                                  |
| Mohamed El Khatib           | Invenergy                             |
| Zhibo Wang                  | Mitsubishi Electric Power Product Inc |



# Questions and Answers